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EXAMINER

ELALLAM, AHMED

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/189,793
Filing Date: November 12, 1998
Appellant(s): LIM, BYUNG KEUN

David C. Oren
Registration No. 38,694
For Appellant

EXAMINER'S ANSWER

MAILED

DEC 20 2006

GROUP 2600

This is in response to the notice of non-compliant Appeal Brief filed on November 30. The Appeal Brief filed 07/05/2006 appealing from the Office action mailed

02/06/2006. The Appeal Brief filed on 07/05/2006 is in fact in compliance with 37 C.F.R. § 41.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 30-32, 34-36, 38-40 and 43-47 stand rejected under 35 U.S.C. 103(a) over U.S. Patent 5,235,615 to Omura in view of U.S. Patent 5,487,083 to Nakajima et al.

The rejections are hereby presented for clarity and convenience.

I. Claims 30-32, 34-36, 38-40 and 43-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Omura US (5,235,615) in view of Nakajima et US (5,487,083). Hereinafter referred to Omura and Nakajima respectively.

Claims 30, 32, 34, 36, 38, 40 and 43:

Regarding claims 30 and 32, with reference to figure 1, Omura discloses a mobile communication system comprising a plurality of remote unit and a base station, a system in which the base station communicates to the plurality of remote units with a plurality of base-communications signals (claimed plurality forward communication channels) which are modulated with spread-spectrum and transmitted simultaneously and on the same carrier frequency from the base station. Similarly Omura discloses that the plurality of remote-communications signals (reverse communication channels), which use the same carrier frequency, are transmitted from the plurality of remote units, respectively, so that the plurality of remote-communications signals arrive simultaneously at the base station, and that each of the remote-communications signals has its own unique chip codeword. For a particular two-way communications channel between a particular mobile and the base station, the unique chip codeword used for

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the base-communications signal and the remote-communications signal, respectively, may be the same. See column 2, lines 38-63. (Claimed each of the plurality of reverse communication channels and each of the plurality of forward communication channels utilize one common frequency each of the plurality of reverse communication channels and each of the plurality of forward communication channels have a unique code; and the plurality of reverse communication channels and plurality of forward channels carry data simultaneously). (Examiner interpreted the same carrier frequency as being the claimed common frequency).

Regarding claim 34, 36, with reference to figure 1, Omura discloses a mobile communication system (claimed apparatus) comprising a plurality of remote unit (a remote unit has a transmitter that transmit on reverse channel and a receiver for receiving data on a forward channel) and a base station, See column 3, lines 32-47. Omura also discloses that for a particular two-way communications channel between a particular mobile and the base station, a unique chip codeword used for the base-communications signal and the remote-communications signal, respectively, may be the same. See column 2, lines 38-63. (Examiner interpreted the bi-directional two-way communication as being the claimed the reverse communication channel and the forward communication channel are configured to carry data simultaneously).

Regarding claim 38 and 40, with reference to figure 1, Omura discloses a mobile communication system (claimed apparatus) comprising a plurality of remote and a base station, (base has a transmitter that transmit on reverse channel and a receiver for receiving data on a forward channel), See column 3, lines 32-47. The base station

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communicates to the plurality of remote units with a plurality of base-communications signals (claimed plurality forward communication channels), which are modulated with spread-spectrum and transmitted simultaneously and on the same carrier frequency from the base station. Similarly Omura discloses that the plurality of remote-communications signals, which use the same carrier frequency, are transmitted from the plurality of remote units, respectively, so that the plurality of remote-communications signals arrive simultaneously at the base station. Omura further disclose that for a particular two-way communications channel between a particular mobile and the base station, the unique chip codeword used for the base-communications signal and the remote-communications signal, respectively, may be the same. See column 2, lines 38-63. (Claimed the reverse communication channels and the forward communication channels have a unique code), Omura also discloses that the base station communicates to the plurality of remote units with the plurality of base-communications signals (forward communication channels), which are modulated with spread-spectrum and transmitted simultaneously and on the same carrier frequency from the base station. The plurality of remote-communications signals, which use the same carrier frequency, are transmitted from the plurality of remote units, respectively, so that the plurality of remote-communications signals arrive simultaneously at the base station, See column 2, lines 38-63.

Regarding claim 43, with reference to figure 1, Omura discloses a mobile communication system (claimed apparatus) comprising a plurality of remotes units and a base station, (base has a transmitter that transmit on reverse channel and a receiver

for receiving data on a forward channel), See column 3, lines 32-47. The base station communicates to the plurality of remote units with a plurality of base-communications signals (claimed plurality forward communication channels), which are modulated with spread-spectrum and transmitted simultaneously and on the same carrier frequency from the base station. Similarly Omura discloses that the plurality of remote-communications signals, which use the same carrier frequency, are transmitted from the plurality of remote units, respectively, so that the plurality of remote-communications signals arrive simultaneously at the base station. (Examiner interpreted the Omura "same" carrier frequency for uplink and downlink channels as being the claimed common frequency channel, and the Omura's base-communications signals and the plurality of remote-communications signals using the same carrier frequency as being the claimed common channel includes a reverse communication channel and forward communication channel that utilize the common channel (since the claimed common channel is referred to as frequency channel in the specification)). Omura further disclose that for a particular two-way communications channel between a particular mobile and the base station, the unique chip codeword used for the base-communications signal and the remote-communications signal, respectively, may be the same. See column 2, lines 38-63.

As to claims 30, 32, 34, 36, 38, 40 and 43, the difference between Omura and claims 30, 32, 34, 36, 38, 40 and 43 is that Omura, while indicating that the unique code word can be the same for a pair of forward and reverse channels, it does not specify that each reverse channel and forward channel have unique code to identify the

channels as a reverse communication channel and forward communication channel respectively).

However, with reference to figure 1A, Nakajima discloses a radio zone (2a) in which a common radio frequency f_1 is used, and wherein a spectrum spreading code group $C1_1$ having a plurality of spectrum spreading codes $C1_{11}$, $C1_{12}$, ..., $C1_{1m}$ that define a plurality of communication channels, each communication channel is assigned two spectrum spreading codes which define a pair of forward (from the mobile to the base station) and reverse (from the base station to the mobile station) channels. See column 3, lines 63-67 and column 4, lines 1-11. (Claimed each reverse communication channel having a unique code to identify the channel as a reverse communication channel, and each of forward communication channel having a unique code to identify the channel as forward communication channel).

Therefore, it would have been obvious to a person of ordinary skill in the art, at the time the invention was made to have the forward and reverse channel of Omura each separated by unique code word as taught by Nakajima in lieu of the same code for both reverse and forward channels so to avoid interference between adjacent radio zones and to increase the capacity. (Nakajima, column 3, lines 59-62).

Note: as to claims 34 and 43, Nakajima shows only one mobile within radio zone 2a, it implicitly discloses a plurality of mobile stations within the same radio zone 2a, in addition, the mobiles within the radio zone 2a use the same frequency, each communication channel between the mobile station and the base station has a

spreading code to indicate whether it is a forward or reverse channel, thus the newly added features involving third code and fourth codes are met by Nakajima.

Claims 31, 35, and 39:

Regarding claim 31, Omura discloses having each chip codeword of each remote-communications signal to be orthogonal to chip code words of a plurality of remote communication signals, see column 6, lines 28-51. (Claimed each unique code is one of a plurality of mutually orthogonal codes).

Regarding claim 35, Omura discloses having each chip codeword of each remote-communications signal to be orthogonal to chip code words of a plurality of remote communication signals, see column 6, lines 28-51. (Claimed each unique code is one of a plurality of mutually orthogonal codes).

Regarding claim 39, Omura discloses having each chip codeword of each remote-communications signal to be orthogonal to chip code words of a plurality of remote communication signals, see column 6, lines 28-51. (Claimed each unique code is one of a plurality of mutually orthogonal codes).

Regarding claims 44-47, Nakajima implicitly discloses a plurality of mobile stations within the same radio zone 2a, each communication channel between each mobile station and the base station has a spreading code to indicate whether it is a forward or reverse channel.

(10) Response to Argument

Note: Hereinafter the “*italics*” are statement by Appellant.

Independent claim 30:

Appellant submitted (page 8) that the applied references may be combined as alleged in the office action, and even if combined, do not teach or suggest all the features of independent claim 30. Appellant also alleged *"the office action attempts to modify Omura by applying Nakajima, without any basis in the prior art, in order to show that a reverse channel and forward channel have separate codes"*.

Appellant further alleged: *"Nakajima only discloses that a communication channel may be assigned two spectrum spreading codes to define a forward channel and to define a reverse channel. This teaching of Nakajima may not be simply modified into Omura. That is, Omura's CDMA system does not suggest a full duplex system such as a CDD system. Nakajima relates to a TDMA type of system. Therefore, there is no suggestion for modifying Omura's CDMA system to include additional features of Nakajima as alleged. Rather, the only suggestion for the claimed features (and therefore to modify Omura) is provided by applicant's own specification. That is, the Office Action clearly has chosen respective features from different references and combined those references based on applicant's own teaching (and not based on the teachings of the prior art). Applicant respectfully submits that there is no suggestion in the known prior art to modify Omura's CDMA system so as to include unique codes being assigned to reverse and forward channels as recited in independent claim "*.

Examiner respectfully disagrees, as indicated in the rejection above with regard to claim 30, Omura discloses that for a particular two-way communications channel between a particular mobile and the base station, the unique chip codeword used for the base-communications signal and the remote-communications signal, respectively,

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may be the same. See column 2, lines 38-63. Examiner asserts that the fact that the teaching of "unique chip codeword may be the same" also suggest that the unique chip codeword **may not be the same**, that is the unique chip codeword used for the base-communications signal **may not be the same** as the unique chip codeword used for the remote-communications signal. Therefore, contrary to Appellant, the two-way communications (full-duplex) channel teaching of Omura suggest different codes for each forward and reverse channel. Nakajima as appellant admits "*discloses that a communication channel may be assigned two spectrum spreading codes to define a forward channel and a reverse channel*". Nakajima's **two spectrum spreading codes per channel** are understood to be between one single mobile and the base station, each spectrum code to indicates whether the reverse or forward channel, Nakajima implicitly discloses a plurality of other mobile stations within the same radio zone (which uses the same frequency), thus the plurality of forward and reverse channels each having a unique code are met by Nakajima. In addition, Examiner had shown in the rejections above that Nakajima avoid interference between adjacent radio zones and increase the capacity by having different codes for each forward and reverse communication channel. (Nakajima, column 3, lines 59-62). Therefore, Examiner submits that the prior art relied upon in combination show that a reverse channel and forward channel have separate codes.

As to the indication of the Omura's CDMA and Nakajima's TDMA features, Examiner notes that such feature are not related to the claimed subject matter. The

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claim subject matter of independent claim 30 is silent to whether the system is a CDMA or TDMA system.

Appellant further alleged (page 9, second paragraph) *"Nakajima does not relate to a plurality of reverse communication channels and a plurality of forward communication channels that utilize one common frequency"*.

Examiner respectfully disagrees, Nakajima implicitly have a plurality of mobile stations in the radio zone 2a (only one mobile 5a is shown for illustration purposes); as discussed above, the radio zone uses one common frequency (f_1) and since a communication channel between a mobile and the base station is defined either a reverse or forward based on the spreading code used, the limitation of *"a plurality of reverse communication channels and a plurality of forward communication channels that utilize one common frequency"* is taught by Nakajima, and thus not ignored as alleged by Appellant. In addition, as shown above (with regard to claim 30), Omura discloses a system in which the base station communicates to the plurality of remote units with a plurality of base-communications signals (claimed plurality forward communication channels) which are modulated with spread-spectrum and transmitted simultaneously and on the same carrier frequency from the base station. Similarly Omura discloses that the plurality of remote-communications signals (reverse communication channels), which use the same carrier frequency, and are transmitted from the plurality of remote units, respectively, so that the plurality of remote-communications signals arrive simultaneously at the base station, and that each of the remote-communications signals has its own unique chip codeword. Thus, contrary to

Appellant, both Omura and Nakajima discloses a plurality of forward and reverse channel each having a unique code, and the plurality of forward and reverse channels use one common frequency.

As to claim 30, Examiner concludes that contrary to Appellant allegation, a prima facie case of obviousness has been established as can be evidenced from the rejections and argument presented above.

Dependent claim 31:

Claim 31 specify that each unique code is one of a plurality of mutually orthogonal codes. Omura discloses having each chip codeword of each remote-communications signal to be orthogonal to chip code words of a plurality of remote communication signals, see column 6, lines 28-51. In addition the code words of Nakajima are also orthogonal. Such orthogonally is a characteristic of CDMA based system.

Dependent claim 32:

Claim 32 specify that each reverse communication channel is a communication channel for carrying data from a mobile terminal to a base station and each of the forward communication channels is a communication channel for carrying data from a base station to a mobile terminal. Appellant alleged that there is no suggestion for these features of dependent claim 32 in combination with the other features of independent claim 30. Examiner had shown all the feature of independent claim 30 above to be unpatentable over Omura in view of Nakajima. Further, Examiner had shown those

forward and reverse channels are respectively between base station and the remote terminals.

Dependent claim 44:

Appellant alleged that Omura and Nakajima do not teach or suggest *"the unique code to identify the channel as a reverse communication channel is different for each of the plurality of reverse communication channels of the one frequency channel, and the unique code to identify the channel as a forward communication channel is different for each of the plurality of forward communication channels of the one frequency channel"*.

Examiner respectfully disagrees, as discussed above, while Nakajima shows only one mobile within radio zone 2a, it implicitly discloses a plurality of mobile stations within the same radio zone 2a in which a single frequency f1 is used (the claimed one frequency channel), in addition, the mobiles within the radio zone 2a use the same frequency, each communication channel between the mobile station and the base station has a spreading code to indicate whether it is a forward or reverse channel. The spreading codes of Nakajima are inherently different from each other, because that is required to preserve the orthogonality feature of the spreading codes, therefore all the codes used in at least the radio zone 2a are unique, similarly the chip code-words of Omura are orthogonal to each other and therefore are unique.

Independent claim 34:

Appellant alleged, *"the applied references may not be combined as alleged. Additionally, the applied references do not teach or suggest all the features of independent claim 34. Furthermore, even if combined, Omura and Nakajima still do not*

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teach or suggest the claimed features relating to a first unique code, a second unique code, a third unique code and a fourth unique code. At best, Nakajima only discloses two spectrum spreading codes for a channel. There is no suggestion in Omura and/or Nakajima for the claimed first through fourth unique codes. The Office Action fails to provide a prior art reference suggesting the four unique codes. Accordingly, the Office Action fails to make a prima facie case of obviousness”.

Examiner respectfully disagrees, Examiner had noted in the final rejection that “Nakajima shows only one mobile within radio zone 2a, it implicitly discloses a plurality of mobile stations within the same radio zone 2a, in addition, the mobiles within the radio zone 2a use the same frequency, each communication channel between the mobile station and the base station has a spreading code to indicate whether it is a forward or reverse channel, thus the newly added features involving third code and fourth codes are met by Nakajima”. In addition, as discussed above the mutually orthogonal codes of Omura and Nakajima requires that each code is unique. Therefore contrary to Appellant, Nakajima discloses *a first unique code, a second unique code, a third unique code and a fourth unique code*. Therefore given similar reasons as discussed with regard to independent claim 30, Examiner believes that a *prima facie* case of obviousness has been established.

Dependent claim 35:

Appellant alleged that “*Neither Omura nor Nakajima relates to unique codes for first and second reverse communication channels and/or forward communication channels of one frequency channel. Accordingly, the Office Action's citation to Omura*

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does not suggest the features of dependent claim 35. There is no suggestion for these features of dependent claim 35 either alone or in combination with the other features of independent claim 34". Examiner respectfully disagrees, claim 35 specify that "each unique code is one of a plurality of mutually orthogonal codes". Both Omura and Nakajima teach such feature as discussed above with reference to independent claim 34.

Dependent claim 36:

Claim 36 specify the apparatus being a mobile station. Appellant alleged that *"there is no suggestion for these feature of dependent claim 36 either alone or in combination with the other features of independent claim 34".* Examiner respectfully disagrees, Nakajima discloses remote terminal (s) in communication with the base station. Thus the claimed apparatus being a mobile terminal is met by Nakajima.

Dependent claim 46:

Appellant alleged that *"Nakajima does not disclose first through fourth unique codes being different. Rather, Nakajima explicitly describes only two spectrum spreading codes per channel. See Nakajima's col. 4, lines 8-11. There is no suggestion for this feature of dependent claim 46 either alone or in combination with independent claim 34".* Examiner respectfully disagrees for similar reason presented above with regard to claim 34. In addition, Nakajima's ***only two spectrum spreading codes per channel*** are understood to be between one single mobile and the base station, each spectrum code to indicates whether the reverse or forward channel, given the implicit plurality of other mobile stations within the same radio zone (which uses the same

frequency), the claimed first through fourth unique codes are taught by Nakajima, the codes are mutually orthogonal because they CDMA codes. Thus the feature of claim 46 are met by Nakajima.

Independent claim 38:

Appellant alleged that *"For at least similar reasons as set forth above, the applied references do not teach or suggest all the features of independent claim 38. That is, the applied references may not be combined as alleged in the Office Action. Further, the applied references, even if combined, do not teach or suggest the claimed transmitter and receiver in combination with the claimed plurality of forward communication channels, plurality of reverse communication channels and unique codes, as recited in independent claim 38"*.

Examiner respectfully disagrees for similar reasons presented above.

Dependent claim 39:

Appellant alleged that *"Neither Omura nor Nakajima relates to unique codes for each of a plurality of reverse communication channels and/or each of a plurality of forward communication channels of one frequency channel. Accordingly, the Office Action's citation to Omura does not suggest the features of dependent claim 39. There is no suggestion for these features of dependent claim 39 either alone or in combination with the other features of independent claim 38"*. Appellant's argument is similar to that of independent claim 30. Thus Examiner believe for similar reason set forth above, the claimed limitations of dependent claim 39 are met by Omura in view of Nakajima.

Dependent claim 40:

Dependent claim 40 specifies that the apparatus is a base station. Omura and Nakajima, as indicated with regard to base claim 38 discloses a base station.

Dependent claim 45:

Appellant's argument with regard to claim 45 is similar to that of independent claim 30. Thus Examiner traverse the argument in similar fashion as presented above with regard to claim 30.

Independent claim 43:

Appellant argues *"For at least similar reasons as set forth above, the applied references do not teach or suggest all the features of independent claim 43. That is, the applied references may not be combined as alleged in the Office Action. Further, the applied references, even if combined, do not teach or suggest the claimed transmitter and receiver in combination with the claimed plurality of forward communication channels, plurality of reverse communication channels and unique codes, as recited in independent claim 43"*.

Examiner respectfully disagrees, as indicated in the rejection of claim 43 above, Examiner had shown that the combined references of Omura and Nakajima in combination teach a *transmitter and receiver in combination with the claimed plurality of forward communication channels, plurality of reverse communication channels and unique codes*.

Dependent claim 47:

Appellant argues that Nakajima discloses only two spectrum codes per channel and therefore doesn't disclose the recited limitation of claim 47: *"each of the first unique*

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code, the second unique code, the third unique code and the fourth unique code are different".

Examiner respectfully disagrees; Appellant's argument is similar to the argument presented above with regard to claim 46. Therefore, for similar reason set forth above. Nakajima implicitly discloses the limitation of claim 47.

In view of the discussion above and given a reasonable broadest interpretation of the claim limitations, a prima facie case of obviousness is established based on the combined references, that of Omura and Nakajima.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

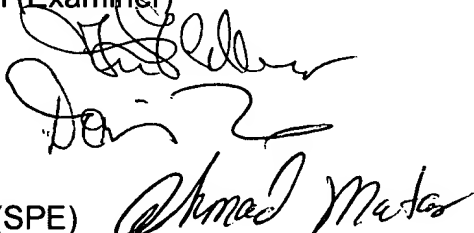
Respectfully submitted,

Ahmed Elallam (Examiner)

Conferees:

Doris to (SPE)

Ahmad Matar (SPE)

The block contains three handwritten signatures. The first signature is for Ahmed Elallam, the second is for Doris to, and the third is for Ahmad Matar. The signatures are written in black ink and are somewhat stylized.